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358. Proposed by H. C. FEEMSTER, A. B., Professor of Mathematics, York College, York, Neb.

Cut four coplanar non-copunctual straight lines in a harmonic range.

CALCULUS.

387. Proposed by C. N. SCHMALL, 604 East 5th Street, New York City.

An object P , being placed beyond the principal focus F of a convex lense, determine its position when its distance PQ , from its image Q , is a minimum.

388. Proposed by L. H. McDONALD, M. A., Ph. D., Sometimes Tutor at Cambridge, Jersey City, N. J.

$$\text{Find } \int \frac{x dx}{(1+x^3)^{\frac{3}{2}}}.$$

MECHANICS.

240. Proposed by G. B. M. ZERR, A. M., Ph. D., Philadelphia, Pa.

A simple beam length $2a$, supported at both ends, is loaded in the form of a parabola, height of vertex b . Find deflection at center due to this load.

241. Proposed by C. N. SCHMALL, 604 East 5th Street, New York City.

In a certain New York theatre there is an asbestos curtain supported by thin circular rings, radius r , which move on a cylindrical rod of radius a . The curtain is intended to be drawn by a *steady pull*. Taking μ as the coefficient of friction, show that this will not be possible if r be less than $a\sqrt{(1+\mu^2)}$.

NUMBER THEORY AND DIOPHANTINE ANALYSIS.

170. Proposed by PATRICK WALSH, 1451 Annunciation Street, New Orleans, La.

The areas of rectangles A and B are respectively $15170 \frac{10}{27}$ and 31230.3627 . Find the sides and diagonal of each rectangle in exact or rational numbers.



NOTES AND NEWS.

The editors extend to all our readers the Greetings of the Coming Year. We hope that delays in the regular appearance of THE MONTHLY will not occur during 1910. We trust that our subscribers will continue their support and that we may have the immediate renewals of those who have not already remitted their subscriptions for the new year.

On December 23, Editor Miller was married to Miss Cassie A. Boggs. They will make their home in Urbana, Illinois. The other editors and all readers of the monthly extend congratulations to the happy couple.